



SIMARINE®



## ST107

USER MANUAL

V1.1

## ST107

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## 1. Introduction

Simarine's ST107 Digital tank module is a highly versatile module. It's main purpose is to measure any liquid level. But it can be used to measure voltage, current or temperature.

ST107 Digital tank module can measure liquid levels such as water, waste water, fuel or any other liquid.

It comes with 4 integrated resistance sensing inputs operating from 0 ohm - 65 kohm and 3 integrated voltage sensing inputs, operating from 0 V - 35 V DC.

You can connect any tank or temperature sensor operating in this range. ST107 also features a configurable alarm contact, which fires on specific alarms. It can handle a maximum current of 1A on max. 30 V DC.

The alarm can be configured via PICO's menu or the Simarine mobile application.



## 2. EU Declaration of conformity



**MANUFACTURER:** SIMARINE d.o.o.

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Declares that the following product:

**PRODUCT TYPE: ST107**

Is in conformity with the relevant European union harmonization legislation:

**EMC Directive 2014/30/EU**

(as per harmonized standards EN EIC 61000-6-1:2023, etc.)

**Low Voltage Directive 2014/35/EU**

(as per harmonized standards EN EIC 62368-1:2023)

**Radio Equipment Directive 2014/53/EU**

(as per harmonized standards ETSI EN 300 328, ETSI EN 301 489-1, ETSI EN 301 489-17 and EN 18031)

**UNECE Regulation No. 10 (ECE-R10)**

(as per the latest applicable version, e.g., ECE-R10, Rev.6/Amend.5)

**RoHS Directive 2011/65/EU and amendments**

(as per harmonized standards EN EIC 63000:2018.)



### 3. Safety

Installation of Simarine electronics should be made by electrical specialists with proper safety equipment.

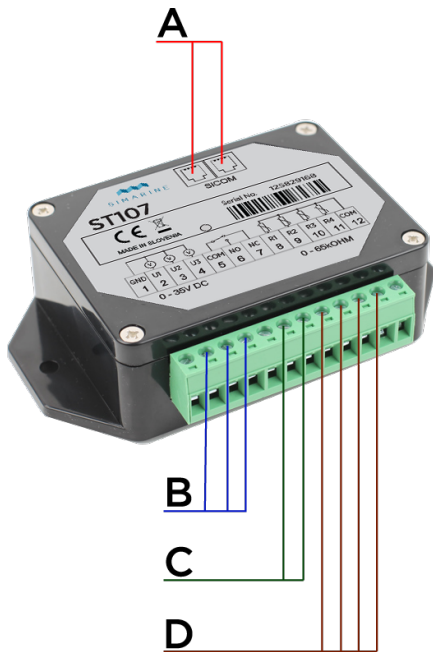
**CAUTION:** Do NOT connect anything to a damaged battery. It could heat up, catch fire or explode.

**CAUTION:** Lead-acid Batteries can generate explosive gases during operation. Never smoke, allow flames or sparks near the battery. Make sure to keep sufficient ventilation around the battery.

**CAUTION:** When working with a battery remove all personal metal items like watches, rings, necklaces and bracelets. Metal items in contact with the battery terminals might cause a short circuit with a very high electric current, which may heat up and melt nearby objects and cause severe burns.



## 4. Overview



- A - 2x SiCOM input
- B - 3x Voltage sensing input
- C - 1x Alarm contact (optional and configurable via PICO menu)
- D - 4x Resistance sensing input



## 5. Installation

Install the ST107 tank module in a clean and dry place, protected from accidental spilling of liquids.

- You can fix the tank module with the supplied screws.
- Connect all cables.

### 5.1 Mounting

**CAUTION:** Install the power unit in a clean and dry place protected from accidental spilling of liquids.

Remove the shunt cover by unscrewing two screws on top of the power unit cover.

To install the power unit using supplied voltage cables find a place no further than 3 m away from the battery/battery bank.

You can fix the power unit with the supplied screws using four holes (two on each side) on bottom of the casing.

### 5.2 Cables

**CAUTION:** Failure to observe the required cable cross-sections can damage the shunt, wiring, or cause a fire.

**SiCOM data cable:**

- For the SiCOM connection use the supplied cable.

Cable length	Cable type
< 5m	No limitations
>= 5m	2x2x0.25 mm <sup>2</sup> twisted pair (recommended)



## 6. Connecting

For the ST107 digital tank module to function, it is necessary to do the following steps:

1. Connect the ST107 digital tank module to Simarine's PICO via the SiCOM port
2. Connect any compatible tank or temperature sensor to the ST107 via the resistance or voltage sensing input
3. Connect the alarm contact in order to execute specific operations on the alarm.

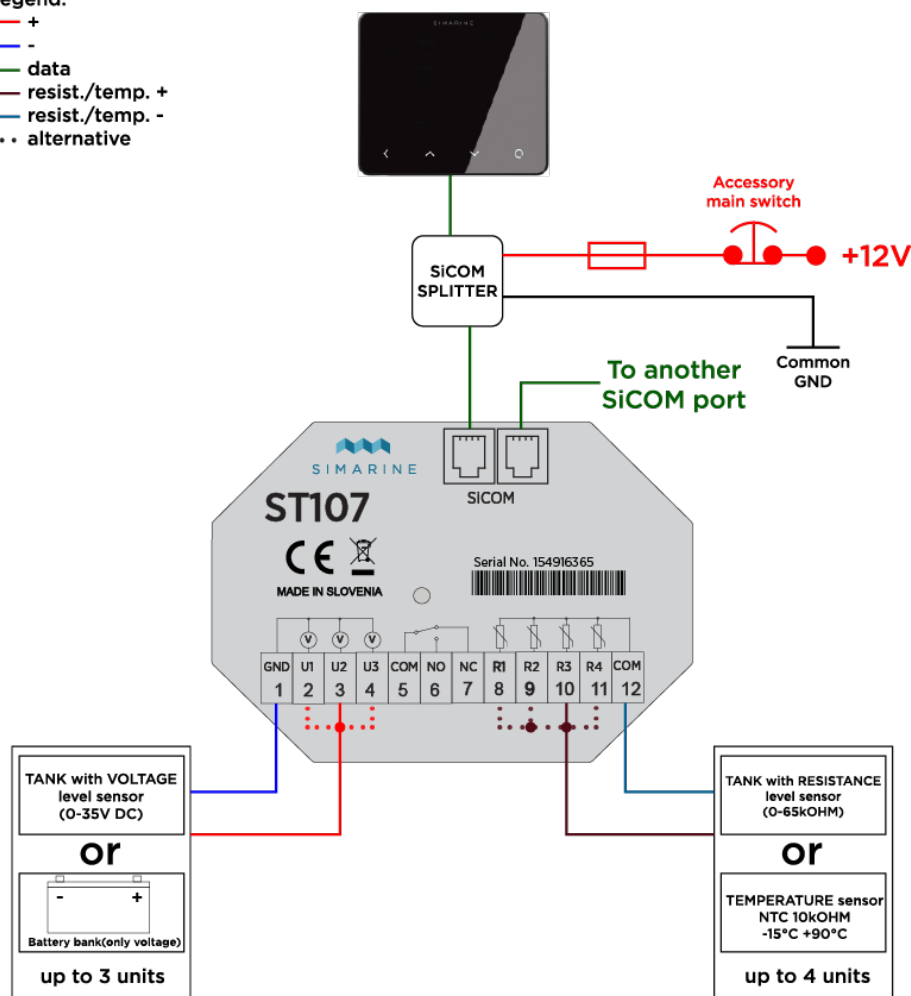
Each connected liquid or temperature sensor needs to be configured and calibrated. This can be done in the PICO menu or via the Simarine Application. The PICO manual contains detailed information on how the connections and calibrations are done.

The alarm contact can be triggered by configuring it in the PICO menu or the Simarine App. The Pico manual contains detailed information on how to configure the alarm settings.

### 6.1 Diagram

Scheme legend:

- +
- -
- data
- resist./temp. +
- resist./temp. -
- ..... alternative





## 7. Technical specifications

Operating	
Voltage range	6 - 35 V
Temperature range	-20°C - 70°C (-4°F - 158°F)
Power consumption at 12 V	
Operating	2.5 mA
Voltage inputs (U1, U2, U3)	3
Range	0 - 75 V
Resolution	1 mV
Accuracy	± 0.3 %
Sampling rate	100 ms
Resistance inputs (R1, R2, R3, R4)	4
Range	0 ohm - 65 kohm
Accuracy	± 3%
Sampling rate	100 ms
Dimensions	112x72x31 mm
Connectivity	SiCOM
Alarm contact	1



## 8. Troubleshooting

### 8.1 Shunt Sensors not visible

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If the ST107 is not visible in the PICO's menu, check the following:

- Is the ST107 properly connected to the PICO via the SiCOM port
- If you are not using the Simarine SiCOM cable, make sure that the length of the cable does not exceed 8 meters and is properly twisted

v

#### 6.1 Tank sensor is not visible on PICO

If the tank sensor is not visible in PICO's menu, check the following:

- Is the ST107 properly connected via the SiCOM port to the PICO.
- If you are using your own SiCOM cable make sure you are using the right one.

Check the requirements in the [Cables](#)<sup>[14]</sup> chapter.

#### 6.2 Tank sensor is showing the same liquid level for long time

In case you installed the sensor for the first time, consider checking the following:

- Are you using a compatible resistance/voltage tank sensor? Check the requirements in [Technical specifications](#)<sup>[18]</sup>.
- Is the tank sensor properly installed and working?
- Is the tank sensor properly connected to the right resistance or voltage input sensor on ST107?
- Is the tank sensor calibrated via PICO's menu? Each tank sensor needs to be calibrated to show the right level. Check PICO's manual, how to calibrate a tank sensor.

In case the tank sensor has stopped working, consider checking the following:

- Is the tank sensor properly installed and working? In case you are using a floating sensor, it could be stuck.
- Consider to recalibrate the tank sensor.

#### 6.3 Tank sensor is showing empty tank

In case you installed the sensor for the first time, consider checking the following:

- Is the tank sensor covering the whole tank level? In case you are using a floating sensor, which is too short, it can happen that the sensor is not detecting any liquid under a specific level.
- Consider to recalibrate the tank sensor.

Safe Voyage.



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